BECKER
AVIONIC SYSTEMS

OPERATING INSTRUCTIONS

Digital Player

DP 4100

BECKER
AVIONIC SYSTEMS

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Subject to technical changes

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Fault description

Unit type : ..... Serial number : .....

Aircraft type : .....

Brief description of the fault :

.....

.....

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.....

Should the fault only occur sporadically, please answer the following questions :

The fault occurs after . . . . . minutes of operation.

The fault occurs under the following environmental conditions :

- ☐ low temperature
- ☐ high temperature
- ☐ high humidity
- ☐ vibration

The fault is engine speed-dependent and occurs above/below . . . . . rpm.

Should any problems arise, I may be contacted under the following adress :

.....

.....

I am available between 8 a.m. and 4 p.m. under the following telephone number :

..... office : .....

..... private : .....

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IMPORTANT

Carefully read these operating instructions right through before attempting to operate the digital player.

Keep these operating instructions carefully. They contain important safety and operating instructions for the digital player.

INTRODUCTION

Thank you for purchasing the BECKER digital player. The digital player can be installed in the instrument panel and is easy to operate. The technology used is to the state of the art.

To fully utilise the capabilities of your digital player, please carefully read these operating instructions right through before you start operating the set.

If you have any questions regarding the operation of the digital player, please get in touch with your nearest Becker Dealer or with the Becker Customer Service.

The CAUTION and NOTE highlights have the following meanings:

CAUTION	Failure to comply, or incorrect compliance, with these instructions or procedures can lead to damage to equipment.
NOTE	Feature to which attention should be drawn.

SAFETY INFORMATION

- Do not connect the unit to a.c. voltage source of more than 32.2 V DC.
- Do not connect the unit to a power source with the polarities incorrect.
- Avoid installing and using the unit in environmental temperatures below -20° C or over +55° C.
- Switch off the unit when starting or shutting down motors or engines.
- The unit should be protected from the aircraft system by its own 350 mA circuit breaker.
- The unit must be switch-off for changing the flash-card.

GENERAL INFORMATION

The DP 4100 is a playback-system for audio-files. Several tracks will be played back automatically, like a CD-player. The audio-files are stored on a PCMCIA-flashcard in MPEG2-layer3-format.

The operation depends on the data-structure of the PCMCIA-card. The card can be configured as a simple *Audio-Card*; in this case the human interface is like a CD-player. The track to be played back can be selected by *Select*-buttons or *Data*-knob. After pressing the *Play/Stop*-button, the playback will be started at the current track. After this, the following tracks will be played automatically. Pressing the button will toggle between *stop* mode and *playback* mode. Stop will set the current track to 1.

If the card is configured as an *Announcement-Card*, 2 menus are available. In the 1st menu, a mission can be selected, the 2nd menu defines a language list. The current announcement will be played in the selected languages; after that, the playback will be stopped automatically, and the next announcement is automatically selected. The playback can be stopped by the *Play/Stop*-button.The volume can be adjusted while playback, if this function is enabled.

The Cardsetup Software Package (CD-ROM with order number 0546.763-909) is required for the data compilation of music or announcements ATA-flashcards. The CD-ROM contains the Cardsetup Software, the Cardsetup Software Manual and the Aircraft Maintenance Manual.

CAUTION :
Only the ATA-flashcards may be used, which are listed in the accessories with order number.

❑ Approval

LBA.0.10.500/1 JTSO

❑ Available versions

DP 4100-(001)
mono output, control output for external eject indication, (retrofit unit for TP 3100-(1))
Article-No.: 0527.343-925

DP 4100-(002)
mono output, control output for external run indication, (retrofit unit for TP 3100-(1)-02)
Article-No.: 0527.351-925

DP 4100-(003)
stereo output, volume control with 20 dB max. attenuation, (retrofit unit for TP 3100-(2))
Article-No.: 0527.361-925

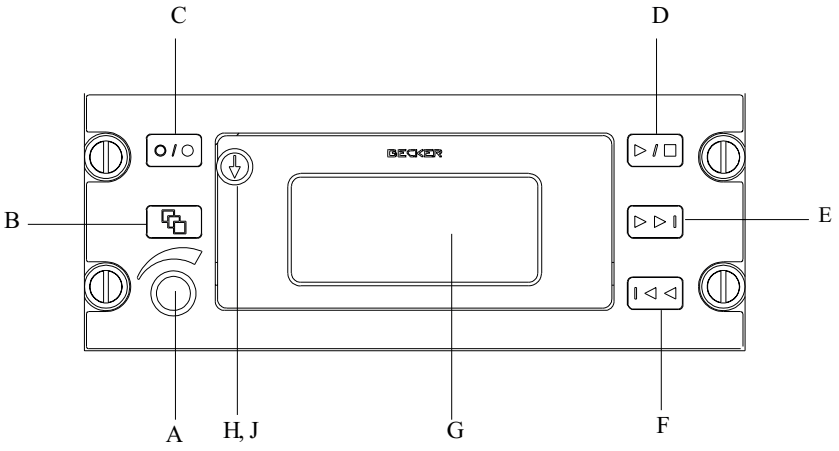
DP 4100-(004)
stereo output, volume control with 60 dB max. attenuation, (retrofit unit for TP 3100-(2A))
Article-No.: 0527.378-925

DP 4100-(005)
mono output, control output for external eject indication, (retrofit unit for TP 3100-(1)-03)
Article-No.: 0543.284-925

❑ Accessories (not contained in the scope of delivery)

25-pin cable jack (inclusive locking device)	Article-No.: 0430.293-254
DP 4100 cardsetup software (CD-ROM inclusive Cardsetup Software Manual and Aircraft Maintenance Manual)	Article-No.: 0546.763-909
Demo-flashcard 8 MB	Article-No.: 0546.658-909
ATA-flashcard 8 MB	Article-No.: 0549.118-965
ATA-flashcard 16 MB	Article-No.: 0551.635-965
ATA-flashcard 32 MB	Article-No.: 0549.126-965
ATA-flashcard 64 MB	Article-No.: 0549.134-965
ATA-flashcard 128 MB	Article-No.: 0549.142-965
ATA-flashcard 256 MB	Article-No.: 0549.150-965

OPERATING CONTROLS



❑ Description and function of operating controls

Fig.	Controls	Description	Function
A	Data edit knob with Enter button	Rotary switch with push-button switch	Rotary switch for Data edit or continuous control of volume of playback, push-button for Enter
B	Menu button	Push-button	Selection of menu
C	On/Off button	Push-button switch	On/Off switch for Digital Player
D	Play/Stop button	Push-button	Start and Stop of play-back selection of music records or announce-ments

Fig.	Controls	Description	Function
E	Select button	Push-button	Selection forward
F	Select button	Push-button	Selection backwards
G	Display	LC-display	Graphic display
H	Release button	Push-button	Unlock display flap
J	Slot	Input/output for PCMCIA card	For exchangable digital solid state memory

OPERATING INSTRUCTIONS DP 4100

❑ Power-On

Press the release button (H) and open the slot (J). Put the valid PCMCIA card into the slot. Push back the display to close the slot.

Pushing the On/Off-button (C) will switch on the system. First, an initialisation-routine will be running; after that the PBIT (Power-On-Built-In-Test) occurs. For this time, the BECKER-Logo appears on the LCD.

If the PBIT results no errors, it will be checked for presence a PCMCIA-card in the slot, and – if positive – a format-check will be done. In case of correct format, the LCD will show the Card-ID and the Card-Configuration (*Announcement or Audio)* for ca. 3 seconds. After this, the system switches to *Stop*-Mode.

CAUTION : The unit must be switch-off for changing the flash-card.

Operating modes:

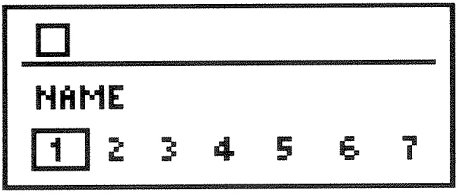
Dependent on card-configuration, several operating modes are possible. The actual operating mode will be displayed on the LCD by a symbol.

❑ Stop mode

After finishing the PBIT and displaying the Card-ID / Card-Type (3 seconds), the device will switch automatically to *Stop* Mode. This will be the normal start or full-back mode of the system.

The information on the display depends on Card-Configuration.

Display with Card-Configuration “Audio”:



□ = Stop indication

NAME = Name of the Music-Title (ID-file or filename)
Lower line = Sequence of tracks

Display with Card-Configuration “Announcement”:

MIS.: = Name of the selected mission (ID-file or filename)
ANN.: = Name of the current announcement (ID-file or filename)
Lower line = List of languages

The displayed title/announcement (depends on Card-Configuration) can be stored on the PCMCIA-card in a text-file. If not, the filename will be displayed.

By the *Select Right* (E)- / *Select left* (F)-buttons or *Data*- knob (A), a music-title / announcement can be selected. The track-number and the identification-text (text-file or filename) will be displayed / marked on the LCD.

By pressing the *Menu*-button (B), the system will switch to the mode-menu, see menu selection “Audio” and “Announcement”.

❑ Playback mode “Audio”

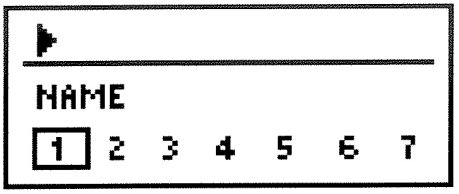
Pressing the *Play/Stop*-button (D) while in *Stop* Mode, this will switch the system into *Playback* Mode.

The playback of the current title starts immediately.

Card-Configuration “Audio”:

After finishing the playback of the current title, the next title will be played, and so on, until the last title is played or the operating mode is changed by the user.

The display shows:



➤ = Playback indication

II = Pause indication

NAME = Name of the Music-Title (ID-file or filename)
Lower line = Sequence of tracks

Pressing the *Select Right*-button (E) skips the current title and switches to the next one.The playback of the new title starts from the beginning. Pressing the *Select Left*-button (F) restarts the current title. A double press skips to the previous track, if available. The current title is marked by a frame.

Pressing the *Play/Stop*-button (D) enters *Stop* Mode. Activating the *Drive/Stop* input will enter *Pause* Mode.

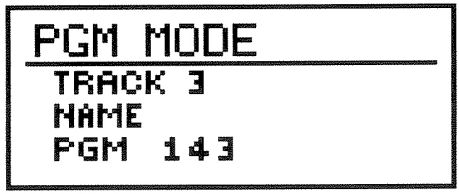
The volume (A) can be adjusted while playback, if this function is enabled.

Audio menu selection:

The functionality of the *Menu*-button depends on card-configuration.

Card-Configuration “Audio”:

Pressing the *Menu*-button while in *Stop* Mode switches the system into *Program* Mode. In this mode, a list of titles to be reproduced can be assembled. The display shows in the top line: “PGM MODE”



TRACK = Track-number
NAME = Name of the Music-Title (ID-file or filename)
PGM = Program list

The programming of the playback-list starts at entry 1. By using the buttons *Select Left* (F) and *Select Right (E) or by Data*-knob (A), a track-number can be selected. The ID of the track will be shown on the LCD. If no *ID.TXT* is available, the filename of the track will be displayed.

By pushing the *Enter*-key (A) the selection can be accepted, and the track-number appears in the program list (lowest line). After that, the programming of the 2nd entry can be done in the same way. If all track-numbers are defined, the playback can be started by pressing the *Play/Stop*-button (D). In this case, the display changes to ”PgmPlay” after the playback-triangle.

NOTE:
Not all available tracks must be written into the list. In addition, tracks can be defined multiple.

The program will stay active until the card will be replaced, the device is switched off, or the program is deleted explicitly.

Pressing the *Menu*-button (B) will delete the program; the display shows for ca. 3 seconds “Program cleared”. After this, the device is in *Stop* Mode again.

Pause mode:

This mode will be available via an input pin at the rear connector. The display will change the operating mode triangle indication to the pause indication (top line : **II** = *Pause* indication).

Continuous play (Repeat):

Simultaneously pressing the buttons *Select Right* (E) and *Select Left* (F) while in *Stop* Mode activates this operating mode.

The display will show in the top line: **“► Repeat”**

The playback will be start with the actual title. After playing the last available title, the playback will be restarted by the first title again.

Pressing Play/Stop-button (D) will enter *Stop* mode.

NOTE: The Repeat function exists with card-configuration "*Audio*" only.

❑ Playback mode "Announcement"

Pressing the *Play/Stop*-button (D) while in *Stop* Mode, this will switch the system into *Playback* Mode.

The playback of the current announcements starts immediately.

Card-Configuration "Announcement":

The current announcement will be reproduced in all of the selected languages in the defined chronological order. When all languages are played, the playback will be stopped automatically. The buttons *Select Left* (F) and *Select Right* (E) will have no function in this operation mode. The display shows:

MIS.: = Name of the mission (ID-file or filename)
ANN.: = Name of the announcement (ID-file or filename)
Lower line = List of languages

The current played language is marked by a frame; languages which have been played completely are displayed inverse.

Pressing the *Play/Stop*-button (D) changes into *Stop* Mode.

The volume (A) can be adjusted while playback, if this function is enabled.

Select mission:

By pressing the *Menu*-button (B) the first time, the system will switch into the *Select Mission* Mode. The display shows:

Using the *Select*-buttons (E,F) or the *Data*-knob (A), a mission can be selected. The mission name in bigger letters and indicated by triangles on the LCD is active; only 1 mission can be active at a time.

The triangle at the lower line will show that additional missions are available by turning the *Data-entry* knob (A) to the right. On the upper line vice versa.

A special mission called “MUSIC” can be selected. By selecting this mission the digital player will work simular to the card-configuration “AUDIO”. In the mission “MUSIC” all titles are played in order without stopping after the current title.

Announcement menu selection:

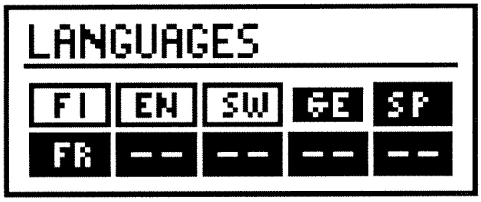
The functionality of the *Menu*-button depends on card-configuration.

Card-Configuration “Announcement”:

With this card-configuration, 2 sub-menus are available, which can be activated by pressing the *Menu*-button (B).

Select language:

Pressing the *Menu*-button (B) once more switches to *Select Language* Mode. The display shows:



Abbreviation for standard languages:

EN = english
FR = french
GE = german
SP = spanish

First line = Language up to five
Second line = Language up to five in addition

Activated languages will be shown in normal mode with frame, deactivated languages in reverse mode.

Using the buttons *Select Left* (F) and *Select Right* (E) or the *Data*-knob (A), a language can be selected, whereby the corresponding frame flashes. The status can be toggled by pressing the *Enter*-button (A).

An activated language will be placed always to the end of the list, whereby the frame in the display doesn't change.

The modes *Select Mission* and *Select Language* can be left on 2 ways:

- Pressing the *Menu*-button (B) changes from *Select Mission* to *Select Language*, after that into *Stop* Mode.

- Pressing the *Play/Stop*-button (D) gets the current settings and starts the playback immediately (*Playback* Mode).

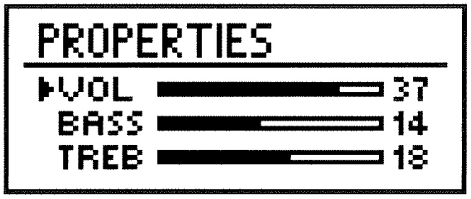
NOTE:
The settings will not stored permanently; this means, after switching off / on the device, the 1st mission on the PCMCIA-card is selected. Also, all available languages for these mission are active and the playback-order was defined by the card.

Pause mode:

This mode will be available via an input pin at the rear connector. The display will change the operating mode triangle indication to the pause indication (top line : **II** = *Pause* indication).

❑ Special functions mode

In *Special Functions* Mode, general adjustments of the system can be done. This mode can be activated by holding the *Menu*-button (B) for a time longer than 2 seconds. The display shows:



Several parameters can be selected by the *Select*-buttons (E,F), whereby the selected parameter will be marked by an triangle. Pressing the *Enter*-button (A) will select the next parameter. The value can be edited by the *Data*-knob (A). Changes will be accepted automatically while editing.

The following parameters are available:

No.	Display	Range	Description
1	Volume	0 ... 44	Volume of playback
2	Bass	0 ... 30	Bass of playback
3	Treble	0 ... 30	Treble of playback
4	Light	0 ... 63	Brightness of LCD and panel
5	Delay	0.2...2.5 sec	Delay between several tracks

The *Special Functions* Mode consists of 2 screen-pages. Pressing the *Select Right*-button (E) or the *Enter*-button (A), if the selection is on the last parameter on the screen, the next page will be opened by the following selection. Analogous, pressing the *Select Left*-button (F), if the selection is on the 1st parameter on the screen, will switch to the previous page (roll-over mode).

Pressing the *Menu*-button (B) finishes the *Special Functions* Mode. The values are stored permanently; they are still available at the next power on.

❑ Selftest

Three test-variants are implemented in the software: ***P***ower-On-***B***uilt-***I***n-***T***est (PBIT), ***C***ontinuous-***B***uilt-***I***n-***T***est (CBIT) and ***I***nitiated-***B***uilt-***I***n-***T***est (IBIT).

In the case of an error, the display will be show:

Upper line = Error number
Lower line = Description of the error

If more than 1 error was detected, this will be displayed by a triangle after the error-number. The following errors will be displayed by pressing one of the *Select*-buttons.

The error message will stay until the operating mode and also the display-contents will be changed.

NOTE:
The error message will be displayed again, if the error state still occurs and was detected by the CBIT.

The display test will be check the performance of the LCD and the panel illumination.

The following error messages are possible:

No.	Error	PBIT	CBIT	IBIT	Display (in add. to ERROR)
1	Card format error	X	X	X	Card Format
2	No card inserted	X	X	X	Insert Card
3	Audio system error	X		X	Audio System
4	RAM error	X	X	X	RAM
5	ROM error	X		X	ROM

❑ Technical data

Power supply voltage	+ 27.5 V DC nominal
Power supply voltage range	+ 18 V to 32.2 V DC
Power consumption (without backlight)	approx. 0.2 A at 27.5 V
Display technology	LCD (positive) with backlight
Dimming	LCD panel independant of software adjustment (setup mode)
Operating temperature	- 20° C . . . + 55° C
Altitude max.	50 000 ft.
Front panel dimensions	56.8 x 145.8 mm (2.24 x 5.74 in)
Case depth	170.3 mm (6.7 in) (without cable connetor)
Weight	approx. 0.8 kg (1.76 lb)
Amplifier function :	
Audio input	775 mV / 7 kΩ
Audio output rated	3.5 V across 600 Ω balanced (+13 dBm)
Volume adjustment range	≥ 60 dB

Digital Player function :

Signal processing	MPEG2-layer3 compliant
Data transfer	TTL level (positive logic)
Audio output rated	0 dBm across 600 Ω sym.
- adjustable	at least - 6 dBm . . . + 13 dBm from outer side
Volume rated (internally adjustable)	0 dBm . . . - 60 dB (depending on version)
- external via DC	+ 15 V (1k -10k (poti or similar))
Frequency response	50 Hz … 16000 Hz (depending on bit rate)
Distortion	< 1 % at 0 dBm and 1 kHz into 600 Ω
Signal-to-noise ratio	> 75 dB at 0 dBm and 1 kHz into 600 Ω
Monitor output	+ 10 dBm across 600 Ω
- adjustable	0 dBm . . . + 13 dBm across 600 Ω from outer side

REPAIR INSTRUCTIONS

If an equipment fault the unit may be sent to a Becker Dealer or the Becker customer service together with a description of the fault. The completed fault description shortens the repair times and hence lowers the resultant costs.

These operating instructions do not replace the equipment manuals listed below.

❑ Equipment manuals

To be purchased from the manufacturer or Becker Dealer :

Aircraft Maintenance Manual
DV 62500.03 Part-No.: 0530.700-071

Component Maintenance Manual
DV 62500.04 Part-No.: 0530.719-071

Cardsetup Software Manual
DV 62500.05 Part-No.: 0544.736-071

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E-Mail: support@becker-avionics.de

Fault description

Unit type : ..... Serial number : .....

Aircraft type : .....

Brief description of the fault :

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Should the fault only occur sporadically, please answer the following questions :

The fault occurs after . . . . . minutes of operation.

The fault occurs under the following environmental conditions :

- ☐ low temperature
- ☐ high temperature
- ☐ high humidity
- ☐ vibration

The fault is engine speed-dependent and occurs above/below . . . . . rpm.

Should any problems arise, I may be contacted under the following adress :

.....

.....

I am available between 8 a.m. and 4 p.m. under the following telephone number :

..... office : .....

..... private : .....